

## Abstract

Methods and apparatus are disclosed for dynamically discovering and utilizing an optimized network path through overlay routing for the transmission of data. A  
5 determination whether to use a default network path or to instead use an alternate data forwarding path through one or more overlay nodes is based on real-time measurement of costs associated with the alternative paths, in response to a user request for transmission of message data to a destination on the network. Cost metrics include delay, throughput, jitter, loss, and security. The system chooses the  
10 best path among the default forwarding path and the multiple alternate forwarding paths, and implements appropriate control actions to force data transmission along the chosen path. No modification of established network communication protocols is required.